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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/762,000	01/21/2004	Scott J. Broussard	AUS920030872US1	4404

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EXAMINER	
TO, JENNIFER N	

ART UNIT	PAPER NUMBER
2195	

MAIL DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/762,000	BROUSSARD ET AL.	
	Examiner	Art Unit	
	JENNIFER N. TO	2195	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 March 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-9,11-17 and 19-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3-9,11-17 and 19-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *11 March 2008* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *05/30/2008*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1, 3-9, 11-17, and 19-24 are pending for examination.

Claim Rejections - 35 USC § 101

2. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3. Claims 9, 11-17, and 19-24 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

4. Claims 9, and 11-16 are rejected under 35 U.S.C. 101 because the claimed invention is directed to a computer program product (i.e. software alone) for use in a data processing system without claiming associated computer hardware required for execution (i.e. the claims should be amended as "a computer program product stored on a computer readable medium executed by a data processing system for operating a virtual machine comprising instructions for:"). A computer program product alone is directed to a non-statutory subject matter.

5. Claims 17, and 19-24 are rejected under 35 U.S.C. 101 because the claimed invention are directed to apparatus claims, but appearing to be comprised of software alone without claiming associated computer hardware required for execution (i.e. a processor). For example, claim 17 recited an

apparatus for operating a virtual machine comprising a plurality of means for (i.e. means for running, means for associating, means for sharing). However, according to the specification (i.e. paragraphs [0041]-[0053]), these means for are software module. An apparatus that comprises only software module is a software apparatus. Thus, it is directed to a non-statutory subject matter.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 1, 3-9, 11-17, and 19-24 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

a. The claim language in the following claims is not clearly understood:

i. as per claim 1, line 7, it is uncertain whether "a virtual machine cluster" refer here is different or the same as "a virtual machine cluster" of line 5. Lines 10-13, it is not clearly understood what is meant by "sharing information about the plurality of virtual machines within the virtual machine cluster such that a virtual machine may be added to the virtual machine cluster or such that a virtual machine may be removed from the virtual machine cluster as the plurality of virtual machines continues to run" (i.e. in what way the sharing information results in adding/removing virtual machine

from the virtual machine cluster). Lines 11, 13, it is uncertain whether a virtual machine is added/removed from which virtual machine cluster (i.e. from the virtual machine cluster of line 5, or from the virtual machine cluster of line 7).

ii. as per claim 8, lines 3-4, it is not clearly understood what us meant by "dispatching threads of the multi-threaded application on different virtual machines such that execution of the multi-threaded application spans multiple virtual machines (i.e. in what way, the dispatching threads of the multi-threaded application on different virtual machines would result in execution of the multi-threaded application spans multiple virtual machines).

iii. as per claims 9, 16, and 24, they have the same deficiencies as claims 1, and 8 above. Appropriate corrections are required.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

9. Claims 1, 3, 9, 11, 17, and 19 are rejected under 35 U.S.C. 102(e) as being anticipated by van Rietschote et al. (hereafter Rietschote) (U.S. Patent No. 7203944).

10. As per claim 1, Rietschote teaches the invention as claim including a method for operating a virtual machine within a data processing system (abstract), the method comprising the computer-implemented steps of:

running a plurality of virtual machines on one or more devices within the data processing system, wherein each virtual machine in the plurality of virtual machines incorporates functionality for interoperating with other virtual machine in a virtual machine cluster (abstract; col. 2, lines 11-15; col. 3, lines 1-5);

associating the plurality of virtual machines in a virtual machine cluster, wherein each virtual machine in the virtual machine cluster acts as a node within the virtual machine cluster (abstract; col. 2, lines 15-16; col. 3, line 6 through col. 4, line 47); and

sharing information about the plurality of virtual machines within the virtual machine cluster such that a virtual machine may be added to the virtual machine cluster or such that a virtual machine may be removed from the virtual machine cluster as the plurality of virtual machines continues to run (abstract; col. 2, lines 16-24; col. 4, line 59 through col. 5, line 21; col. 6, lines 64-66; col. 7, lines 64-66).

11. As per claim 3, Rietschote further teaches sharing load values representing computer resource utilization among the virtual machines in the virtual machine cluster; and performing a load balancing operating across the virtual machine cluster (col. 4, line 66 through col. 6, line 55).

12. As per claims 9, 11, 17, and 19, they are rejected for the same reason as claims 1 and 3 above.

Claim Rejections - 35 USC § 103

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

14. Claims 4-8, 12-16, and 20-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over van Rietschote et al. (hereafter Rietschote) (U.S. Patent No. 7203944), as applied in claims 1, 3 above, and in view of Zhu et al. (hereafter Zhu) (Jessica2: A Distributed Java Virtual Machine with transparent Thread Migration Support", IEEE, 2002, pages 381-388).

15. Zhu was cited in IDS filed 05/30/2008.

16. As per claim 4, Rietschote teaches the invention substantially as claimed in claims 1, 3 including determining that a CPU load utilization on a first virtual machine exceeds a threshold value (col. 4, line 66 through col. 6, line 55).

17. Rietschote did not specifically teach moving a thread from the first virtual machine to a second virtual machine during a load balancing operating.

18. However, Zhu teaches moving a thread from the first virtual machine to a second virtual machine during a load balancing operating (fig. 1; section 2, i.e. the java threads in he application can migrate from one node to another upon receiving requests from the load monitor).

19. It would have been obvious to one of an ordinary skill in the art at the time the invention was made to have combined the teaching of Rietschote and Zhu because Rietschote teaches a system for migrating virtual machines among computer systems to balance the load, and Zhu also teaching a system for support the migration of Java Virtual Machine. In addition Zhu teaching of moving a thread from the first virtual machine to a second virtual machine during a load balancing operating would improve the integrity of Rietschote by providing a true parallel execution environment for multithreaded Java application in a distributed Java Virtual Machine (Zhu, abstract).

20. As per claim 5, Rietschote teaches the invention substantially as claimed in claims 1, 3 including determining that a memory load utilization on the first virtual machine exceeds a threshold value (col. 10, lines 13-57).

21. Rietschote did not specifically teach moving a set of one or more objects from the first virtual machine to a second virtual machine during a load-balancing operation.

22. However, Zhu teaches moving a set of one or more objects from the first virtual machine to a second virtual machine during a load-balancing operation (section 3, migrate all the objects used by the migrated thread to another node; section 4.1).

23. It would have been obvious to one of an ordinary skill in the art at the time the invention was made to have combined the teaching of Rietschote and Zhu because Rietschote teaches a system for migrating virtual machines among computer systems to balance the load, and Zhu also teaching a system for support the migration of Java Virtual Machine. In addition Zhu teaching of moving a set of one or more objects from the first virtual machine to a second virtual machine during a load-balancing operation would improve the integrity of Rietschote by providing a true parallel execution environment for multithreaded Java application in a distributed Java Virtual Machine (Zhu, abstract).

24. As per claims 6-7, they are rejected for the same reason as claims 4-5 above.

25. As per claim 8, Rietschote teaches the invention substantially as claimed in claim 1. Rietschote did not specifically teach running a multithread application within the virtual machine cluster, and dispatching threads of the multithreaded application on different virtual machines such that execution of the multithreaded application spans multiple virtual machines.

26. However, Zhu teaches running a multithread application within the virtual machine cluster, and dispatching threads of the multithreaded application on different virtual machines such that execution of the multithreaded application spans multiple virtual machines (abstract; figs 1-2; sections 2-3).

27. It would have been obvious to one of an ordinary skill in the art at the time the invention was made to have combined the teaching of Rietschote and Zhu because Rietschote teaches a system for migrating virtual machines among computer systems to balance the load, and Zhu also teaching a system for support the migration of Java Virtual Machine. In addition Zhu teaching of running a multithread application within the virtual machine cluster, and dispatching threads of the multithreaded application on different virtual machines such that execution of the multithreaded application spans multiple virtual machines would improve the integrity of Rietschote by providing a true parallel

execution environment for multithreaded Java application in a distributed Java Virtual Machine (Zhu, abstract).

28. As per claims 12-16, and 20-24, they are rejected for the same reason as claims 4-8 above.

Response to Arguments

29. Applicant's arguments with respect to claims 1, 3-9, 11-17, and 19-24 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

30. Any inquiry concerning this communication or earlier communications from the examiner should be directed to JENNIFER N. TO whose telephone number is (571)272-7212. The examiner can normally be reached on M-T 6AM- 3:30 PM, F 6AM- 2:30 PM.

31. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai An can be reached on (571) 272-3756. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

32. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information

for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Meng-Ai An/
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